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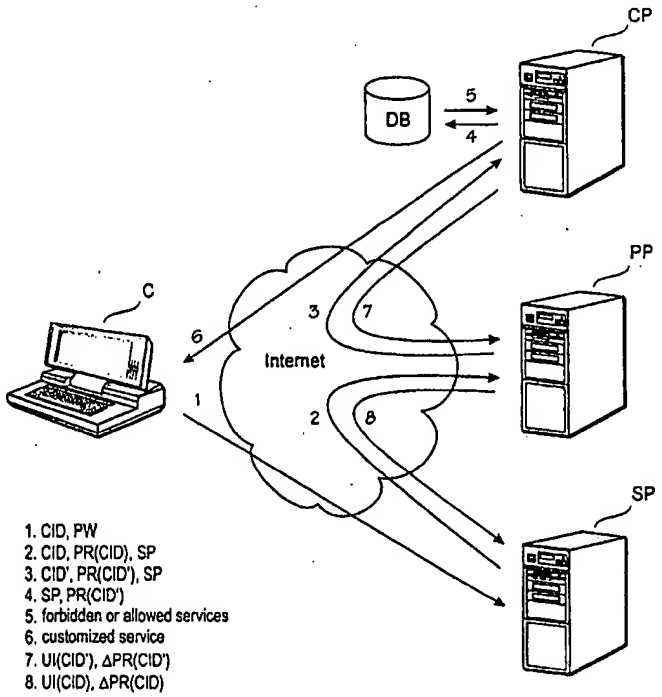
(54) Title: COMBINING SERVICES IN AN INTERNET–TYPE NETWORK

(57) Abstract

A method of combining two different Internet services. A client (C) contacts (1) a first server (SP) and gives the server its identification data (CID, PW). The client (C) is forwarded (2) to a second server (CP), which provides services (6) to the client (C). The first server (SP) transmits to the second server (CP) the client's profile data (PR(CID)), and the second server (CP) customizes (4, 5) the services produced for the client (C) according to the client's profile data (PR(CID)) and/or the identity of the first server (SP). The client's identification data (CID) is preferably concealed (3) from the second server. In the step of service customization, the client (C) can be prevented (4, 5) from accessing some of the available services of the second server (CP), for example on the basis of the identification data of the first server (SP). From the available services of the second server (CP), the services to be offered primarily to the client can be selected on the basis of said profile data PR(CID).



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COMBINING SERVICES IN AN INTERNET-TYPE NETWORK

BACKGROUND OF THE INVENTION

The invention relates to a method and equipment for combining services of especially different types in an Internet-type network.

In the present application, 'Internet' must be interpreted broadly to refer to a network covering a large geographical area and/or a plurality of users. Particularly, the purpose is not to exclude restricted subnetworks of the actual Internet, called Intranet, Extranet etc. 'Client' (C) refers to a user of the services or to a user computer. A client may be an actual person or a process operating in a computer, such as a search robot. 'Page' is an abbreviation of a World Wide Web page. The primary field of use of the invention is the combination of different types of services such that the first services are more technical than the second services, which are in turn more entertainment-oriented than the first services. A producer of a technical service is called a 'service provider' (SP), and a producer of a more entertainment-oriented service is called a 'content provider' (CP). Also the corresponding servers are referred to by these terms. It should be remembered, however, that the division between technical and entertainment-oriented services is only a concrete example intended to illustrate the invention, and that entertainment-oriented services may typically include facts and news.

The Internet has become a new tool for companies for providing services. Marketing and distribution of services through the Internet are increasing very rapidly. On the other hand, companies must make significant investments to maintain the technical quality, content and style of their services at least on the same level as their competitors. It is a problem in many companies that after the initial enthusiasm wears off, there are not enough resources for developing the Web site.

The Web site of Microsoft is an example of a well-designed service package. On the same home page it is possible to find both technical services, such as help in problem situations and downloading of new software updates, and entertaining services, such as news. A problem is, however, that no other company has similar resources for providing different types of services.

Smaller companies have tried to solve this problem, for example, such that a service provider supplements his pages with links to the services of a content provider. A problem with this method is that the service provider

cannot control what a client sees on the pages of the content provider. For example, the service provider cannot prevent the client from seeing advertisements of competing companies. The content provider may even sell the identification data of the client to the companies whose advertisements the client has seen. Correspondingly, the problem for the client is that a jump via a permanent link to the web site of the content provider produces the same page for all the clients instead of customization of the page according to the client's personal preferences. Locating a relevant service or data takes up a great deal of the client's time and consumes the resources of the telecommunication system.

'Profile' refers to the part of the client data that is transmitted to the other server and used by this server to customize the service. The profile may comprise, for example, the following data (from general to detailed): the client has shares, the client has shares of a car company, the client has shares of a certain company, or the client has a stock portfolio with a specific content.

BRIEF DESCRIPTION OF THE INVENTION

The purpose of the invention is to develop a method and equipment implementing the method so that the aforementioned problems can be solved, in other words a service can be customized according to the needs and/or interests of a client. The objects of the invention are achieved with a method and a system which are characterized by what is disclosed in the independent claims. The preferred embodiments of the invention are disclosed in the dependent claims.

The invention is based on combining at least two different servers or server processes. A server of a service provider SP is called a first server and a server of a content provider CP is called a second server. A client contacts the first server via an Internet-type telecommunication network and gives the server his identification data, such as client identity and/or password. The client is directed to another server, which produces services for the client. The first server transmits the client's profile data to the second server, which adapts its services according to the client's profile data and/or the identity of the first server. The client identification data is preferably concealed from the second server. In the service-adaptive stage, the client may be prevented from accessing some of the services of the second server, for example based on the identification data of the first server. The services that are primarily offered to the client may be selected from the services provided by the second server

based on the profile data. In this manner, it is, for example, possible to prevent the administrator of the first server from directing the client to see competing advertisements or services.

The method and system according to the invention have an advantage that the technical service provider does not have to use his time and resources to provide content, and vice versa. The content provider is able to distribute its services via several technical servers. With one contact the client receives customized service, for example data or news that is of current interest to the client. Since the client does not have to specifically look for the data that interests him, the invention saves the resources of the telecommunication system. The invention can be implemented with known devices by means of rather simple changes in software.

BRIEF DESCRIPTION OF THE FIGURES

In the following, the invention will be described in greater detail in connection with preferred embodiments and with reference to the accompanying drawing, in which

Figure 1 is a block and signalling diagram illustrating the invention,

Figure 2 shows the operation of a service provider SP, and

Figure 3 shows the operation of a content provider CP.

DETAILED DESCRIPTION OF THE INVENTION

Figure 1 shows equipment according to a preferred embodiment of the invention and the operation thereof. In step 1, a client C activates with his computer a browser. The computer sets up a connection to the server of a service provider SP via the Internet under the control of the browser. From the point of view of the invention it does not matter whether the client's connection to the Internet is fixed or set up via a switched telephone network. The server of the service provider SP usually identifies the client such that the client has a client identity CID and a password PW. Other means of identification include the use of a smart card or callback. The relationship between the SP and the client is usually confidential. The 'client profile' PR (CID) refers below to the part of the client data that is transmitted to the server of a content provider CP. A good example of a content provider CP is a media company, such as a newspaper publisher. Assume that the service provider, for example a bank, manages the client's stock portfolio. The bank knows the client's identity and the contents of the portfolio. Outsiders are not allowed to know at least the

specific content of a certain client's stock portfolio. In this case, the client profile may be, for example, information that the client has shares of certain companies.

Assume also that the client C owns shares of Car Factory Ltd and is interested in news concerning the company. A user interface provided by the SP may be, for example, such that the content of the stock portfolio is shown as a listing where the name of each share is also a link to the server of the CP. The client thus activates the link to Car Factory Ltd (for example by clicking the company name). The server of the SP then transmits to the server of the CP a service request which preferably contains:

- the identity of the server SP
- the client identity
- the client profile
- service control data.

Control data refers to, for example, communication between the SP and the CP related to different manners of customizing the service. For example, the clients may be divided into different types and the code of the client type can be transmitted in the form of control data. In step 2, according to a preferred embodiment of the invention the service request is not transmitted directly from the SP to the CP, but there is between them an encryption function, which is represented in Figure 1 by a separate server called 'profile proxy' PP. The encryption function may also be a separate function in the server of the SP, for example. The purpose of the encryption function is to convert the identity and/or profile data of the client into such a form that the CP cannot recognize the client's identity if the service in question is anonymous. An anonymous service means a service of the CP which does not require user identification. In some services of the content provider, the client is identified, for example, by means of user identity, in which case the client does not use the service as an anonymous user. An example of such services is real-time data on the stock exchange which can only be accessed by those with valid service subscription. By means of the encryption function, information about the client's identity is only limited to the company whose server the client has contacted. The advantage of the encryption function to the client is, for example, that the client is able to contact the server of a content provider without the CP coming to know the client's identity. The identity of the client is only known to the service provider (in this case the

bank) whose server the client has contacted first. If the client trusts the bank, he may safely browse through advertisements, for example, without fear of becoming a target of aggressive marketing.

The content provider may combine the received client profile with its own profile data, if the use of the content requires client identification. When the client is identified in the service of both the SP and the CP, the latter is also able to use its own client profile data in the service customization and to combine the profile data received from the SP with its own profile data. The CP may already know, for example, the fields of activity the client is interested in. The SP transmits the names of the companies in the stock portfolio together with the client's profile data. The CP is then able to combine the information on the fields of activity and the names of the listed companies for the purpose of customization of content without finding out the client identity used by the service provider.

Another alternative is that a service which normally requires user identification can be provided to the clients of the service provider as a service that is anonymous with respect to the content provider. In this case, the SP in a way treats its clients to the service. For example a stock exchange service, which is normally liable to charge and requires a user identity, may be used by the clients of the SP without any extra charge and user identification when the search comes to the CP via the encryption function PP. Thus the CP will not be able to find out the client's identity. The encryption function can be described by means of a conversion function f:

$$CID \rightarrow f(CID) = CID'$$

wherein the apostrophe means that the data has been converted with the conversion function f. In addition to concealing the client identity CID, it may be preferable to filter or distort the profile data PR(CID) transmitted to the CP. In the case of the stock portfolio, this may be carried out such that the detailed content of the portfolio is not transmitted to the CP but, for example, the exact number of the shares is converted into size ranges or omitted completely. PR'(CID') refers to a client profile distorted in such a manner.

In step 3, the content provider receives a search request where the client data is preferably concealed and/or distorted. Next, the CP provides the clients with customized media content. The customization may include one or more of the following steps. The client may see, for example, news concerning companies that interest him, either companies mentioned in the profile data (in

this case Car Factory Ltd) or companies that operate in the same general field. On the basis of the identity of the SP, news can be selected for the client from the field in question (in this case for example financial news and news of the stock exchange).

In steps 4 and 5, according to another preferred embodiment of the invention the customization of the media content also includes that the CP filters off the advertisements competing with the SP, in other words it prevents the client from seeing these advertisements. This takes place by means of a database DB, for example. In the database, each service provider with which the content provider has a co-operation agreement is assigned a list of the companies whose advertisements are filtered off when the client arrives at the CP server from the server of this SP. Alternatively, it is possible that a list of the companies whose advertisements are allowed is obtained from the database when the client arrives at the CP server from the server of the SP in question. In step 6, the CP forms a service that is customized according to the client's needs.

By means of the functionality described so far, the invention solves the problems described in the introduction, in other words service customization and limiting the client identity to the company whose server the client has contacted. According to yet another preferred embodiment, the invention is complemented such that in step 7 the content provider returns to the service provider usage information UI'(CID') and/or profile conversion data ΔPR(CID'). In the present application, usage information refers to unprocessed data, such as log data. It may include a complete path of the pages of the CP the client has visited and possibly the time spent on each page. Correspondingly, the profile conversion data is data processed from the usage information.

When the client uses services of the CP, he makes choices which may shape the user profile. Some of the choices are of interest to the SP. The SP and the CP may come to an agreement about exchanging such data. For example, in a stock exchange service the client has indicated his interest in certain fields of activity and the SP and the CP have agreed on exchange of this data. However, the client now changes his interests by selecting new fields of activity and deleting some of the earlier choices. This profile conversion data is transmitted from the CP to the SP.

Assume that the service provider directs the client to the server of the CP and the profile data PR indicates that the client is interested in news related to the stock exchange, car industry or a certain car factory. The client finds from the CP server also other interesting things, for example he spends a considerable amount of time in the section of holiday houses, maybe houses in a certain area or of a certain size/price. In such a case, the profile conversion data includes corresponding information about the client's other interests.

When the encryption function PP is used, the usage information UI' and the profile conversion data ΔPR' are reconverted or the encryption is decrypted with an inverse conversion function f^{-1}:

$$UI(CID) = f^{-1}(UI'(CID'))$$

In step 8, the usage information UI and/or the profile conversion data ΔPR is transmitted to the SP in a form the SP understands. The usage information may contain data of the services the client has used in the SP server. The SP may supplement its client register on the basis of this data. Alternatively or in addition, the CP may return to the SP profile conversion data ΔPR that has already been processed.

The encryption function f and the decryption function f^{-1} are implemented most suitably by means of symmetrical encryption, which is presented as $f^{-1}_{key}(f_{key}(x)) = x$, wherein 'key' is the encryption key as well as the decryption key. According to yet another preferred embodiment, the converted identification data of the client is intended for a single use, which means that the client always appears as a new client to the CP, so that the data about the client's areas of interests is only limited to the company whose server the client has contacted himself.

Figures 2 and 3 illustrate the operation according to a preferred embodiment of the invention from the point of view of the SP and the CP, respectively. In step 21 of Figure 2, the service provider identifies the client and determines the client identity CID and the client profile PR(CID). In step 22, this data is transmitted to the CP in an encrypted form, for example by means of transmission via the encryption function PP. In step 23, when the client has terminated the use of the CP, the SP receives unprocessed usage information UI or preferably processed profile conversion data ΔPR. In step 24, the SP updates the client profile PR(CID).

In step 31 of Figure 3, the CP receives from the SP the client identity CID' and the client profile PR'(CID'). In step 32, the CP forms a service customized according to the client's needs. Service customization may include selecting facts, news and/or advertisements on the basis of the profile data and/or the identity of the SP. Usage information indicating, for example, how long the client has been on each page is maintained simultaneously. When the client terminates the use of the CP server, in step 34 the usage information is processed into profile conversion data ΔPR. (If the CP does not perform this in a centralized manner, each SP must carry it out separately in step 24). In step 35, the CP transmits the profile conversion data ΔPR to the SP.

It is obvious for a person skilled in the art that the basic idea of the invention can be implemented in several different manners. In the embodiment described above, the functions SP, PP and CP are provided in different servers which communicate together via the Internet. This is not necessary, but some or all of these functions can be regarded as different processes of one and the same server. This common server is controlled by an external unit which is neither the SP nor the CP. Even though the functions are situated at the different servers SP, PP and CP, they may communicate with each other for example via a local area network. The invention and the embodiments thereof are thus not restricted to the examples described above, but they may vary within the scope of the claims.

CLAIMS

1. A method of combining two different services, in which method:

- a client (C) contacts (1) a first server (SP) via an Internet-type telecommunication network and provides the server with identification data (CID, PW) of the client;

- the client (C) is forwarded (2) from the first server (SP) to a second server (CP), which provides services (6) to the client (C);

characterized in that

- the first server (SP) transmits to the second server (CP) the client's profile data (PR(CID)); and

- the second server (CP) customizes (4, 5) the services provided for the client (C) according to the client's profile data (PR(CID)) and/or the identity of the first server (SP).

2. A method according to claim 1, **characterized** in that before the client is directed to the second server (CP), the client's identification data (CID) is concealed (3) from the second server.

3. A method according to claim 1 or 2, **characterized** in that in the step of service customization, the client (C) is prevented (4, 5) from accessing some of the available services of the second server (CP).

4. A method according to claim 3, **characterized** in that said prevention is based on the identification data of the first server (SP).

5. A method according to any one of the preceding claims, **characterized** in that in the service customization the services that are to be offered primarily to the client are selected from the available services of the second server (CP) on the basis of said profile data PR(CID).

6. A method according to any one of the preceding claims, **characterized** in that the second server (CP) transmits to the first server (SP) data (7, 8) about the services the client (C) has selected from the second server and it preferably processes said data (7, 8) in order to form profile conversion data (ΔPR).

7. An arrangement for combining two different services, comprising:

- a second server (CP) arranged to provide services (6) to a client (C); and

- a first server (SP) arranged to receive from the client (C) his identification data (CID, PW) via an Internet-type telecommunication network and to forward the client (C) to the second server (CP);

characterized in that

- the first server (SP) is arranged to transmit the client's profile data (PR(CID)) to the second server (CP); and

- the second server (CP) is arranged to customize the services produced for the client (C) according to the client's profile data (PR(CID)) and/or the identity of the first server (SP).

8. An arrangement according to claim 7, **characterized** in that it also includes an encryption function (PP) for concealing the client identification data from the second server (CP).

9. An arrangement according to claim 7 or 8, **characterized** in that it also includes means, preferably a database (DB) connected functionally to the second server, for preventing the client (C) from accessing some of the available services of the second server (CP).

10. A server (CP) for producing services (6) to a client (C) via an Internet-type telecommunication network, **characterized** in that the server (CP) is arranged to receive from another server (SP, PP) the client's identification and/or profile data (2, 3) and to customize the services produced for the client (C) according to the client's identification and/or profile data (2, 3) and/or the identity of said other server (SP).

Fig. 1

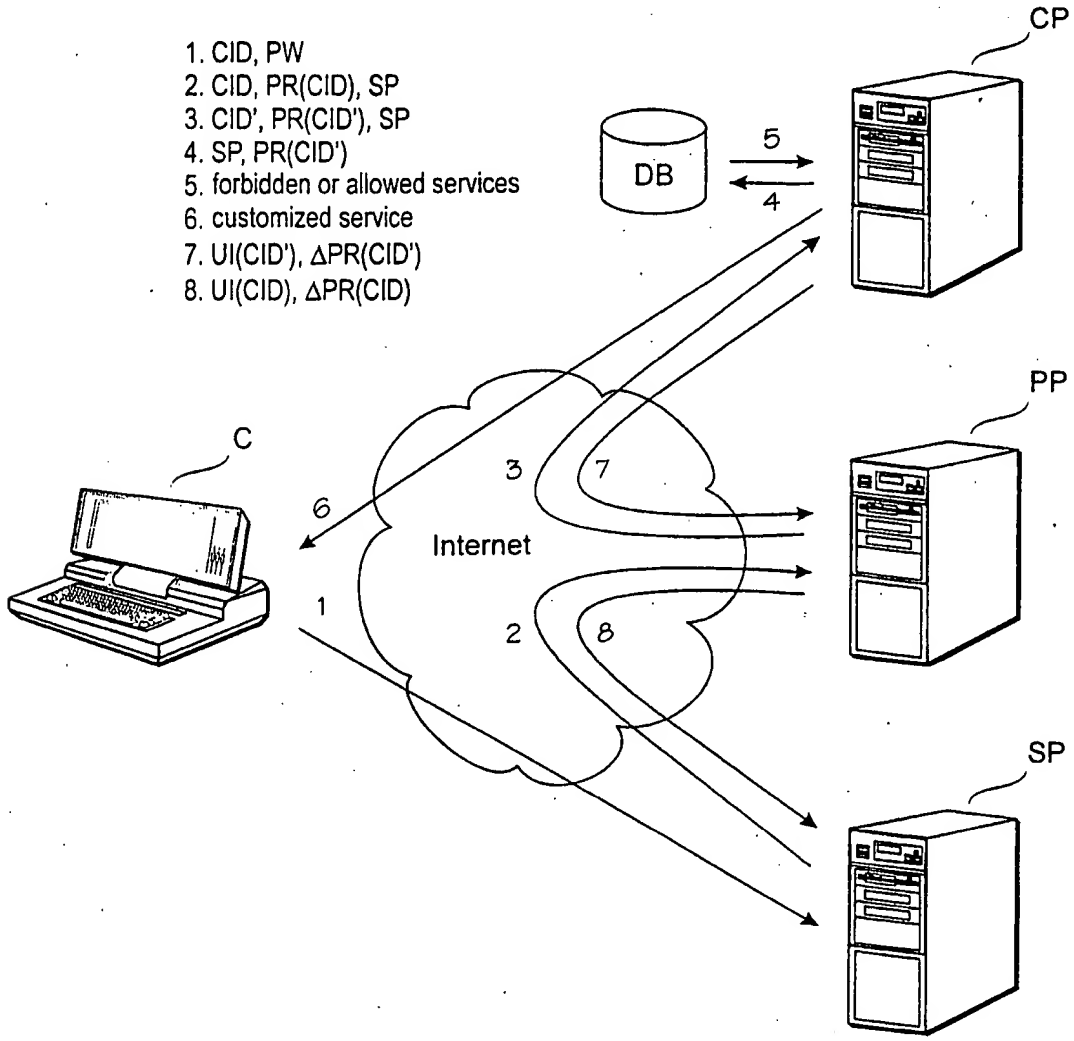

1. CID, PW
2. CID, PR(CID), SP
3. CID', PR(CID'), SP
4. SP, PR(CID')
5. forbidden or allowed services
6. customized service
7. UI(CID'), ΔPR(CID')
8. UI(CID), ΔPR(CID)
CP
DB
5
4
PP
C
3
7
6
Internet
1
2
8
SP

Fig. 2

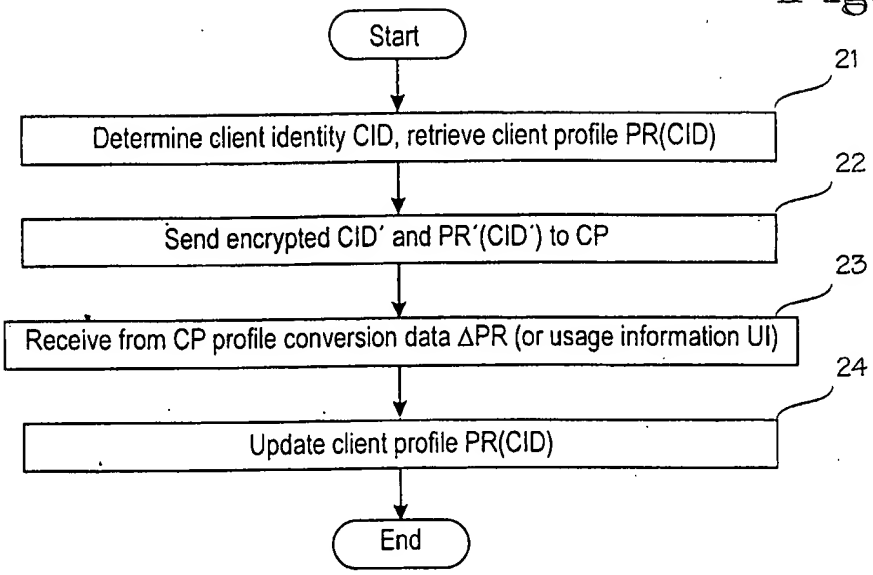
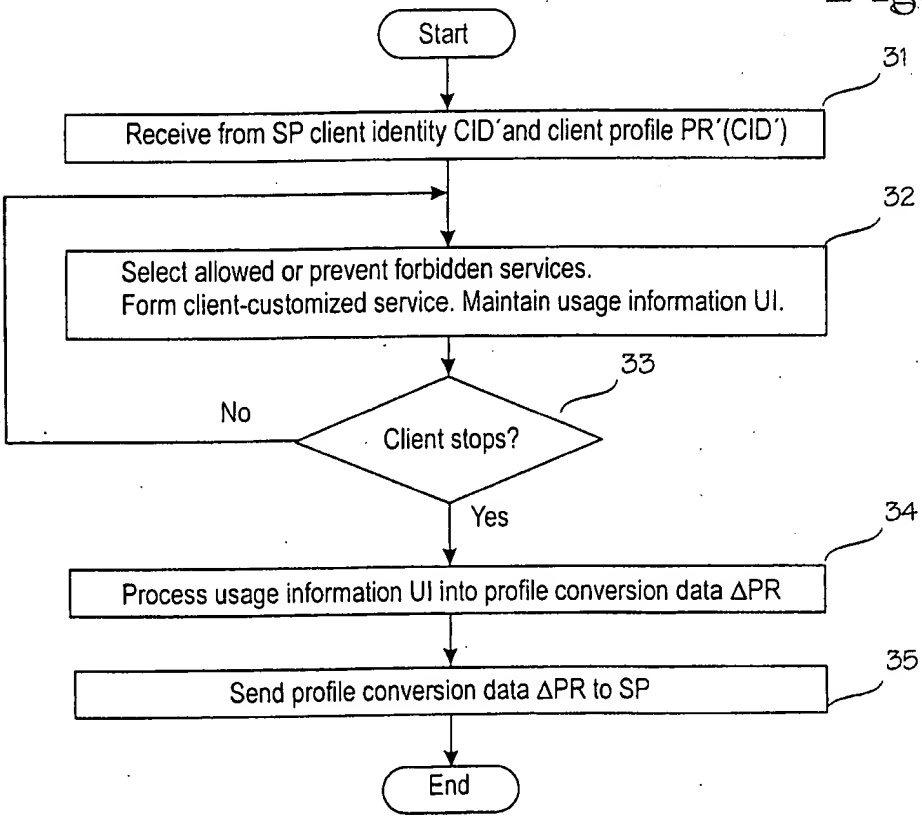

Start
21
Determine client identity CID, retrieve client profile PR(CID)
22
Send encrypted CID' and PR'(CID') to CP
23
Receive from CP profile conversion data ΔPR (or usage information UI)
24
Update client profile PR(CID)
End

Fig. 3


Start
31
Receive from SP client identity CID'and client profile PR'(CID')
32
Select allowed or prevent forbidden services.
Form client-customized service. Maintain usage information UI.
33
No
Client stops?
Yes
34
Process usage information UI into profile conversion data ΔPR
35
Send profile conversion data ΔPR to SP
End